

# Municipal Vulnerability Preparedness Community Resilience Building Workshop



## Northern Hilltown Collaborative

### DRAFT SUMMARY OF FINDINGS

For the Towns of Chesterfield, Cummington, Goshen, and Worthington, MA  
February 18, 2020



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Cover image courtesy of **Flickr user Massachusetts Office of Travel & Tourism**, via Wikimedia Commons.





*All four of the northern hilltowns lie within the Westfield River watershed, one of the nation's only federally-designated Wild and Scenic Rivers. To qualify, a river must have at least one outstanding natural, cultural, historical, or recreational feature. Photo credit: Wikimedia Commons user John Phelan.*

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# Overview

Over recent years, communities across the Pioneer Valley have realized the need to increase planning for extreme weather events and escalate adaptation efforts for climate resilience. For the communities nestled amongst the foothills of the Berkshire Range (known locally as the “hilltowns”), the climate change related shift in weather patterns is disrupting routine seasonal activity and strains municipal budgets as highway staff and emergency responders react to the increased frequency of events such as downed trees and limbs, ice events and snap freezes, and power outages. Examples of recent events that have disrupted normal operations within the hilltowns of the Pioneer Valley include:

- The December 2008 ice storm, which caused widespread damage to electrical infrastructure, buildings, and other personal property due to falling trees and tree limbs. Many parts of the hilltown area were out of power for a week, and some locals were out for up to 10 days.
- Hurricane Irene (2011) caused many local roads to wash out or flood, leaving some residents stranded for a day or more while emergency repairs took place.
- The February 2017 tornado, which touched down in the Town of Goshen before moving to the Town of Conway. The tornado caused significant tree damage on Pine Road in Goshen, leaving two homes damaged and roadways littered with woody debris. Local emergency and highway crews cleared municipal

roadways and worked with MassDOT to clear MA Route 9. The detouring of traffic off of Route 9 caused damage to local gravel roads, which were in a state of thaw due to unseasonably warm weather.

These and other recent events in nearby communities have reinforced the need for urgent climate adaptation, and compelled the four neighboring communities of Chesterfield, Cummington, Goshen, and Worthington to come together to proactively plan for and mitigate potential risks through a community-driven process. Ultimately, the commendable leadership demonstrated by these four “northern hilltowns” will reduce the exposure and vulnerability of their citizens, infrastructure, and ecosystems. This work also contributes to the greater climate resilience of the entire Pioneer Valley region.

Recognizing the importance of both mitigation and adaptation strategies to deal with the challenges of climate change, the northern hilltowns used the Municipal Vulnerability Preparedness (MVP) Planning Grant as an opportunity to integrate these objectives into existing programs and collaborative partnerships. In 2019, the northern hilltowns successfully pursued and received funding from the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) to advance a series of Community Resilience Building workshops within the four towns under the MVP program.

The core directive of the MVP program is to engage community stakeholders to facilitate the education, planning, and ultimate implementation of priority climate change

adaptation actions. Completion of the MVP process will enable this inter-municipal partnership to achieve MVP certified community status for each of the four individual towns by June of 2020 and receive preference for future state grants.

This report provides an overview of the top hazards, current concerns and challenges, strengths, and proposed actions to improve the northern hilltowns resilience to natural and climate-related hazards today and in the future.

## Community Resilience Building Workshop

The Towns of Chesterfield, Cummington, Goshen, and Worthington came together in the winter of 2020 as the “northern hilltowns” to employ a unique “anywhere at any scale” community-driven process known as the Community Resilience Building (CRB) framework to host three five-and-a-half hour workshops: a shared CRB workshop between **Cummington and Worthington on February 1**; **Chesterfield and Goshen on February 5**; and a **regional four-town workshop on February 13**. The list of workshop invitees and workshop content were guided by input from the core MVP team planning team (made of elected officials from each of the four communities). The range of stakeholders invited comprised Town elected officials, community members, local business owners, staff from regional organizations and land-holding agencies, and consultants from the Pioneer Valley Planning Commission.

The workshops’ central objectives were to:

- Affirm community consensus of the local meaning of extreme weather and local natural climate-related hazards;
- Identify existing and future vulnerabilities and strengths in each community specifically and across all four communities;
- Develop and prioritize actions for each Town and a broad stakeholder network;
- Identify opportunities for the four communities to advance actions to reduce risk and increase resilience, regionally and locally.

Approximately 14 participants from Worthington and 7 from Cummington participated in the February 1 workshop; 21 from Goshen and 9 from Chesterfield participated in the February 5 workshop; and 15 participants representing the four communities and other regional stakeholders participated in the workshop on February 13. Each workshop included a combination of large group presentations and small group activities. Pioneer Valley Planning Commission (PVPC) began the workshop with a presentation outlining the CRB process and goals, updating participants on past and ongoing local planning efforts, and presenting new state-provided climate projection data to enable both decision-support and risk visualization. Participants then broke out into small groups and assumed different participatory roles and responsibilities to engage in a rich dialogue and share ideas and experiences.



*Clockwise from top left: Small groups identify features and strategies for Worthington, Cummington, Goshen, and Chesterfield.*

While PVPC kept the format of all three workshops nearly identical, the two workshops dedicated to a local CRB process for Cummington/Worthington and Chesterfield/Goshen featured slightly different content than the regional four-town workshop. While each of the two local workshops allowed cross-dialogue between the communities involved, each town was designated to work within their own small groups to populate municipally-specific features and actions within the CRB matrix

framework. Thus, at each local workshop the two participating communities had the benefit of learning from their neighboring community while developing their own strategies to address climate vulnerabilities. At the regional workshop, representatives from all four communities and regional stakeholders were intentionally spread throughout three small groups in order to facilitate the identification of regional features and actions to benefit the northern hilltowns as a group.



## Top Hazards & Vulnerable Areas

Leading up to the workshops, the core MVP planning team worked with input from Town officials to identify some of the top ongoing concerns and challenges for each of the northern hilltowns. PVPC compiled this information and conducted research into past planning efforts (such as each community's Hazard Mitigation Plans, Open Space and Recreation Plans, and any local site plans and master plans) conducted by each community to understand the area's infrastructural, societal, and environmental trends. A large component of the pre-workshop research was conducted by students in a Smith College Environmental Science and Policy class (ENV312). Instructed by professors Camille Washington-Ottombre and Patricia H.

Mangan, these 18 undergraduates engaged town staff, volunteers, and community members to document existing and potential future conditions of five key areas relative to climate change in the hilltowns: drinking water vulnerability; climate migration and its potential regional impacts to land use and social structure/public health; culverts; winter weather emergency preparedness; and forest health.

At the workshops, PVPC presented participants with a summary of this research in addition to new UMass climate change projections down-scaled to the Westfield River watershed. Participants at each workshop used this information to talk through the suite of priority weather hazards and negotiate common agreement on the top four climate drivers to be used in the CRB process. For all three workshops, participants agreed on four drivers as being the most pressing for the region.



*The core MVP planning team met with Smith College students to discuss local and regional points of concern.*



## Top Climate Drivers

The top four climate drivers for the workshop as identified by the CRB participants were (in no particular order):

- 1. Rising average & extreme temperatures**
- 2. Increase in high intensity, short duration precipitation**
- 3. Increase in frequency of extreme weather events**
- 4. Increase in consecutive dry days**

## Areas of Concern

**Transportation Infrastructure:** the age and condition of culverts; the state of repair of vehicular bridges over waterways; the early arrival of “mud season” due to warming average temperatures and the effect this has on the condition and passability of dirt and gravel roads; the general passability of roads in time of emergency; and the lack of public transit

**Power Grid/Utility Infrastructure:** vulnerability of powerlines to weakened trees and tree limbs; the northern hilltowns’ location at the end of their service providers’ lines

**Vulnerable Populations:** the aging population; the lack of air conditioning (AC) in most hilltown homes; the general lack of medical offices and grocery stores in the area; spotty cell phone service and lack of high speed internet; and new-comers or seasonal residents may be less experienced with and more vulnerable to extreme weather events

**Drinking and Wastewater Infrastructure:** drinking water wells’ vulnerability to drought and contamination (particularly to roadway salting); reliance on power grid for continued well operation; aging pipes serving the limited public water systems that do exist; the age and condition of private septic systems

**Communication Challenges:** many residents don’t seek, or may refuse, help during extreme weather events; spotty cell phone service and the transition from landlines; emergency radio dead spots; lack of high speed internet

**Municipal Capacity:** reliance on volunteerism to fulfill town’s basic functions and emergency response; very limited tax base from which to finance municipal services

**Natural Resources:** health and condition of trees and forested areas; invasive vegetation and insects; vector-borne diseases and habitat shift of pest species; road salt contamination of groundwater

**Zoning and Future Development Patterns:** restrictive zoning; climate migration; municipal code that is in great need of updates

**Master Plans and Other Guiding Documents:** A Master Plan guides the orderly development of cities, towns, or regions and, once adopted, guides development through presenting shared community goals and influencing legal documents such as zoning code. Master plans should generally be updated every ten years, and be consistent with regional plans or guidelines from the state. In the early 2000’s, Massachusetts Executive Order 418 provided resources for municipalities to develop comprehensive, strategic plans for

future development under the “Community Development Program.” Since that time, none of the communities in the Northern Hilltown Collaborative MVP have undertaken town-wide master planning processes. Open Space planning is one important element of master planning, especially with regards to community-level adaptation to climate change, and can help ensure that investments in land protection and the management of protected areas stay relevant as the climate changes. In Massachusetts, communities are required to update their Open Space and Recreation Plans (OSRP) every 7 years in order to remain eligible for a number of state grants that assist in land protection. The participating hilltowns’ OSRP’s were last updated in 2003 (Chesterfield,) 2011 (Cummington,) 2012 (Goshen, with an update now underway), and 2006 (Worthington.)

## Current Concerns & Challenges by Hazard

The northern hilltowns face multiple challenges related to the impacts of climate change and natural hazard-related weather events. In particular, workshop participants expressed concern over the effect of extreme weather on aging infrastructure; the financial and staffing capacity of the communities to meet unprecedented impacts of climate change, and the effects of an aging and generally declining population.

Participants of the Northern Hilltowns Collaborative MVP workshops were generally in agreement that the town and

region are experiencing more intense and frequent storm events, the impacts of which affect the daily activities of all residents. There was also common concern about the challenges of being prepared for future severe weather events, including the ability to fund and administer adaptation projects in communities with low tax bases and which run on volunteerism; the resilience of the transportation network to changing weather and temperature fluctuations and the need for the system to remain operational for emergency travel, at a minimum; and the desire to ensure aging residents are able to access the resources they need in the face of extreme weather. Furthermore, participants established a common directive to address the uncertainty of what would occur if the groundwater, which supplies their drinking water wells, were to be compromised.

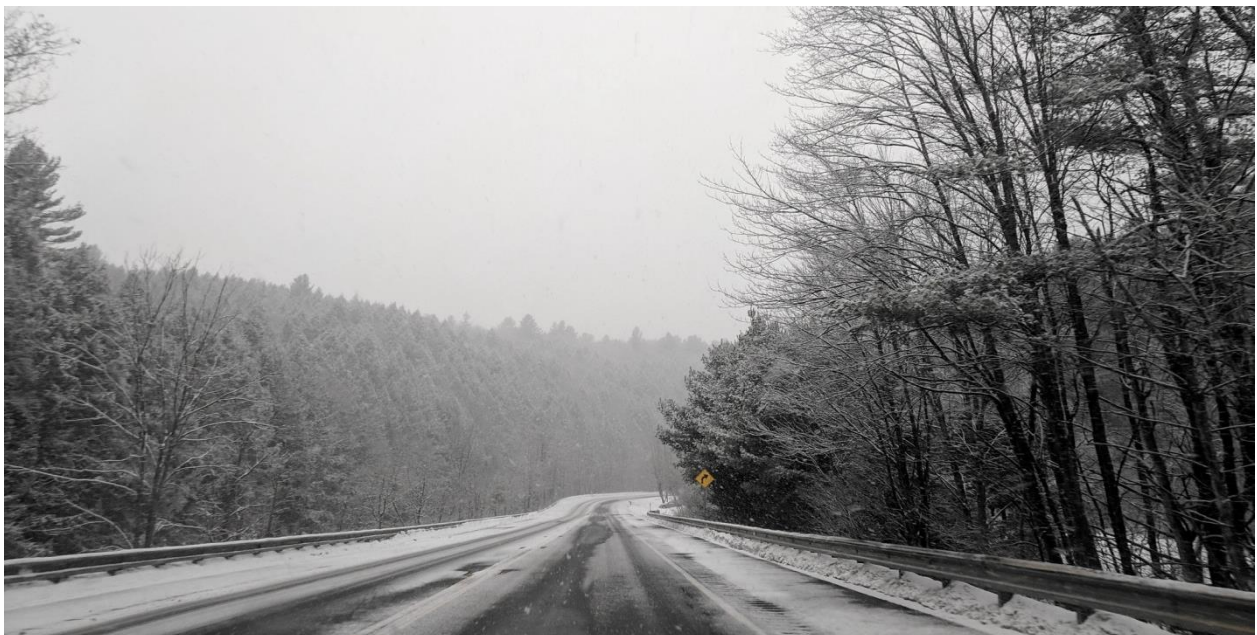
## Specific Categories of Concerns & Challenges

### **Transportation Infrastructure:**

Participants at each of the three workshops expressed great concern over the condition of roadways, especially dirt and gravel roads. Rising average temperatures are destroying road surfaces, and “mud season”, which occurred only seasonally in spring, is now occurring multiple times throughout winter and spring. Dirt and gravel roads need to be regraded more frequently throughout the winter after rutting from rapid ice melt and extreme precipitation events, and paved roads are developing more frequent and larger potholes, all of which strains municipal highway budgets.

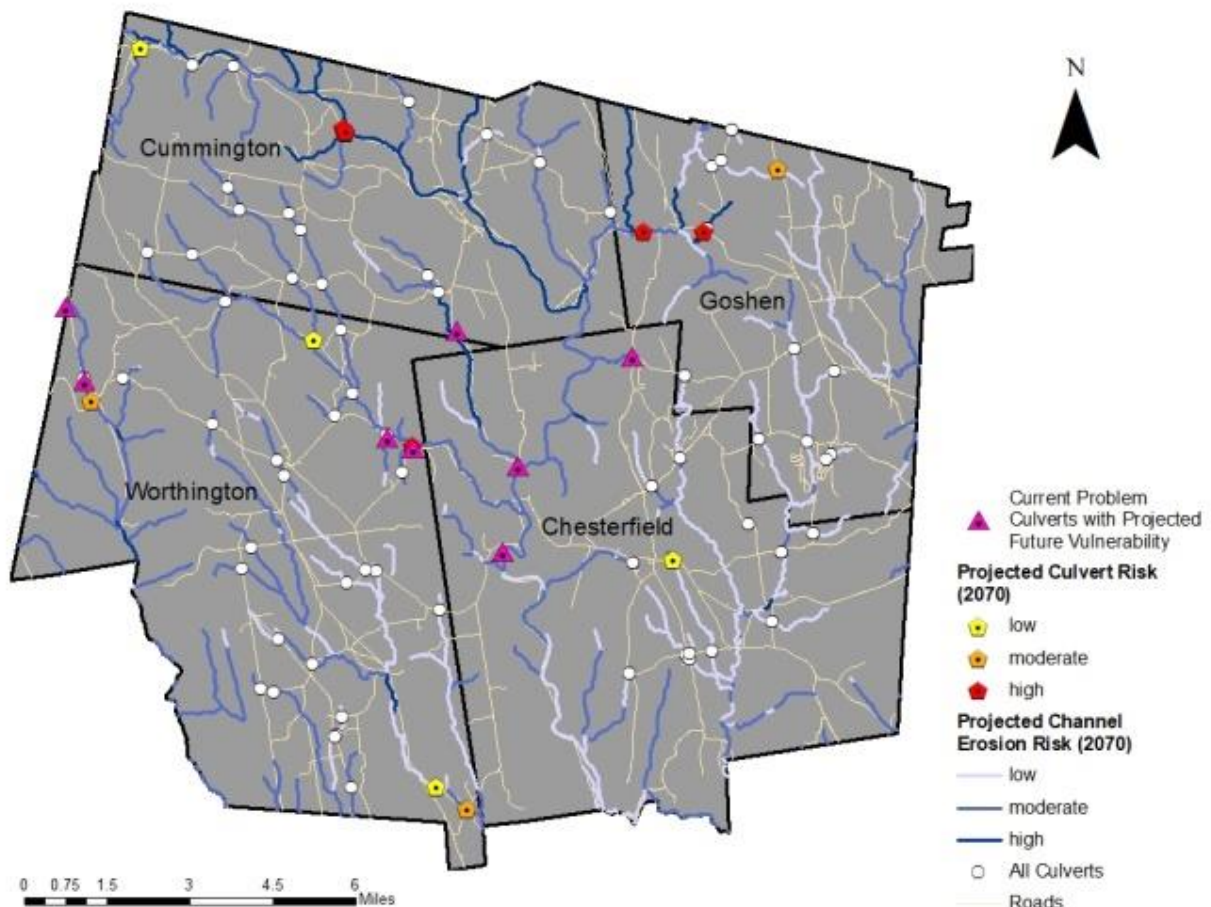
Flash run-off conditions in the spring, coupled with heavy precipitation in the summer months, have created serious flooding and erosion problems in recent years, especially on the many sloped dirt roads throughout the region. These types of

flash warming events are likely to become more frequent with the changing weather patterns brought on by climate change. Furthermore, an increase in ice events is creating an unwelcome burden on local highway department, when roads still



*MA Route 9, the major east-west route in the area, is a hilly and winding road which can be vulnerable to winter hazards and downed tree limbs. Credit: Wikimedia Commons users John Phelan (top) and JJBer (bottom)*





*Smith College students generated this map, which overlays data about existing problem culverts with those projected to fail as precipitation increases. Source: Smith College*

require treatments to reduce hazards even without visible snowfall. As the rain and cold increases, so has the stress on the roads and crews who keep them safe.

Limited road passability also affects residents' ability to conduct routine activity (such as getting to work or going to the grocery store) and emergency travel (such as getting to a medical office or evacuating). Roadway maintenance and condition across town boundaries was cited as another concern, where a road may be well-treated for a winter storm in one community but conditions on the same road across town lines might be unsafe.

Culverts were also identified as a specific concern, as those that are undersized and/or in poor repair can lead to road washouts, erosion of embankments, and localized roadway flooding. Culverts are also of extreme importance to the region's many streams. Participants also noted the importance of wildlife passage, which may not be possible through these aged structures.

Smith College students identified a total of 113 total culverts in the hilltowns using the UMass Stream Continuity Project data (2017). Working with local staff, the students classified approximately one in five as a problem culvert—a total of 22 problem

culverts across the region. Eleven of these problem culverts (50%) were reported to experience flooding due to beaver activity. Eight, or 36% of problem culverts, were reported to flood in heavy rain events of one to two inches in a 24-hour period. An additional two (about 9%) are vulnerable to flooding only in extreme weather events or major storms such as Hurricane Irene. Finally, one culvert is constantly underwater. For more information, see their reports attached to this Summary of Findings.

Finally, participants at all three workshops identified the lack of public transportation as a major problem, particularly for residents with limited access to a personal vehicle. Participants noted that the lack of transit also cements their reliance on personal vehicles, which implies continued emissions of greenhouse gases.

### **Local Concerns**

*Worthington* - River Road Bridge was identified at the workshop as a critical element of the Town's transportation network and future priority for repair. Smith College students identified five problem culverts in town, two along Pierce Road, two on Williamsburg Road, and another on Indian Oven Road.

*Cummington* - A large culvert on Stage Road contributed to localized flooding and impairs road passability. Smith students identified a culvert on Fairgrounds Road on the Worthington border as "constantly underwater."

*Goshen* - Goshen has already identified its top four priority culverts as located on Sears Road and Fuller Road, though another on Hyde Hill Road reportedly floods in heavy rains.

*Chesterfield* - At least nine culverts in Chesterfield were identified by the Smith College research team as problematic due to beaver activity. These are located on Willcutt Road Main Road, South Street, Bryant Street, and Ireland Street. Another four culverts were identified as undersized and causing flooding during heavy rains (on Ireland Street and Bissell Road) or extreme events (on Cummington Road).

**Power Grid/Utility Infrastructure:** Each community noted the vulnerability of powerlines to trees within the region's rights-of-way. Eversource Energy (serving the Towns of Chesterfield, Cummington, and Worthington) and National Grid (serving Goshen) all proactively trim tree limbs and remove hazard trees from utility lines; however, strong wind and heavy ice and snow still leave residents at risk of power outages due to weakened trees. Additionally, the hilltown region is at the end of each of these service provider's lines, meaning that when power goes out regionally, these communities are among the last to recover power after maintenance.

In 2008, a major ice storm left most of the area without electricity and roads blocked with downed trees and debris for days. Local and regional emergency responders, residents, and volunteers rallied together to clear debris and open roadway access for emergency vehicles and repair crews to access powerlines. In Goshen, this "ad hoc" response was repeated after the 2017 tornado littered local roads and MA Route 9 with woody debris. Despite the tenacity exhibited by hilltown residents to work together to respond to these challenges, workshop participants explained how such events demonstrate a need for a more organized and pre-planned approach for



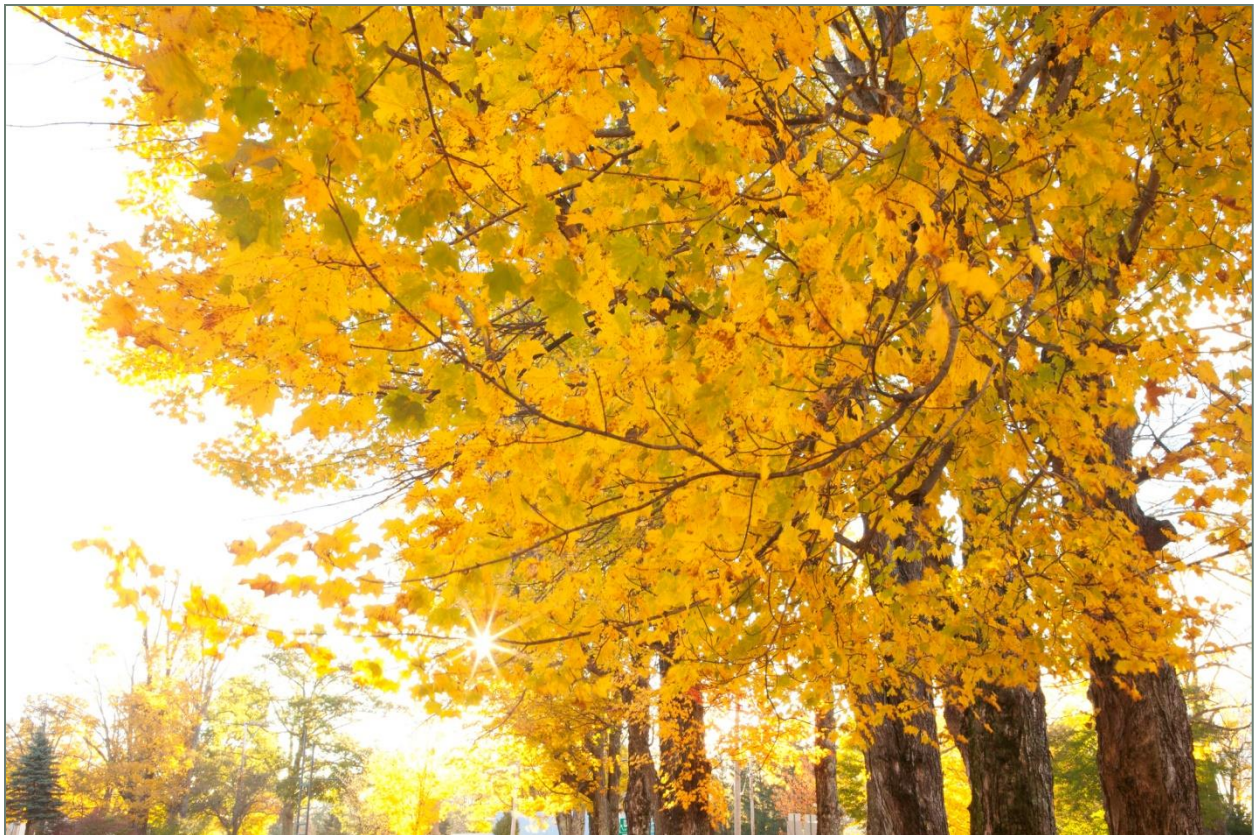
after-event debris management on a regional scale.

The all distribution systems in all four communities are highly vulnerable to prolonged interruptions from storm events. The many residents that are elderly, mobility limited, less technologically advanced, or health impaired in any way are particularly vulnerable to the secondary impacts of a power outage, including prolonged exposure to extreme cold or heat.

Spotty cellphone service, radio dead spots, and lack of high speed internet infrastructure were also identified as top concerns. These are explored more fully under “Communication Challenges” below.

**Vulnerable Populations:** Each of the four communities has an aging population, and, with the exception of Goshen, each community's population is expected to decline by 2035 as well (UMass Donahue Institute). Some participants noted, however, that population could increase due to broad band installation, and lower property costs and cooler summer temperatures overall in the hilltowns.

The greatest concerns with the senior population are isolation, power outages, and prolonged exposure to extreme cold or heat. Power outages, especially when concurrent with extreme temperatures, leave the elderly and medically vulnerable populations at extremely high risk.



*With a long legacy of maple sugaring, the northern hilltowns have many streets lined with grand maple allées such as this one in neighboring Williamsburg. Important symbols of town character, they are also a risk to the street side electric wires. Source: Flickr user Massachusetts Office of Travel and Tourism.*



For seniors that live alone, workshop attendees wanted to ensure that emergency response teams would know who these seniors are and where they are located for emergency check-ins.

Because these communities are small, census data regarding the number of other potentially vulnerable populations within this region has a high margin of error and is unreliable. However, participants of all three workshops discussed the potential challenges that residents of color, who speak languages other than English, and/or who might have a cognitive, seeing, hearing, mobility, or self-care impairment might face in staying resilient during extreme weather events.

Time and again, participants referred to the fact that long-time residents of the hilltowns are likely to own generators and have experience hunkering down during extreme events, especially winter weather events. Those who are likely to be caught off-guard during emergencies are recent residents of the hilltowns—those that are accustomed to the services offered in urban or suburban areas, and who don't know to expect relatively frequent power outages. Across all three workshops, there was one impact of climate change for which even old-time hilltowners seem to be unprepared: extreme heat. Residents of the hilltowns are unlikely to own air conditioners because they have never needed them before. However, many workshop participants noted that they had either recently installed or are considering installing, for the first time, AC units in their

own homes and ensuring cooling shelters exist within their communities.

### **Drinking and Wastewater Infrastructure:**

As all residents of the northern hilltowns rely on groundwater for their drinking water, quality and quantity of groundwater is of prominent interest to workshop participants. Of particular concern is MassDOT's practice of over-salting the state roadways which run through the four communities. Highway Department staff noted that while MassDOT strongly encourages local road managers to attend workshops around best practices on winter road preparation and reducing salt loads, MassDOT operators routinely over-salt routes under its jurisdiction in advance of winter storms.

Road salt poses a particular threat to drinking water quality due to its high permeability through soil and bedrock, and its corrosive nature. Drinking water wells located close to roads are at elevated risk for road salt contamination, and wells near roads operated by the Massachusetts Department of Transportation (MassDOT) are at a heightened risk due to the department's practice of over-salting roads. Several noted that MassDOT's practices have been an ongoing issue and even referenced in reports dating back to the 1908s. As winter precipitation increases with climate change, especially in the form of rain, it is reasonable to anticipate that local highway staff and MassDOT will only increase the number of times per year that they salt the roads.



*Road salt poses a particular threat to drinking water quality due to its high permeability through soil and bedrock, and its corrosive nature. Source: "White out" by Flickr user Kate Ter Haar.*

Smith College students conducted a geographic information system (GIS) analysis of water quality vulnerability through a map detailing vulnerability to road salt. Students gauged vulnerability, using several considerations: geologic condition, proximity to major roads, and number of people served by a given well. The students ranked wells in terms of their vulnerability and priority for enhanced protection, with consideration to the type of well (public or private), the size of the Interim Wellhead Protection Area (IWPA), and the surficial geology of the area. Through the ranking and mapping processes, the students identified specific geographic areas of intense vulnerability to contamination, and

their report designated five public wells as high-priority for protection - one in Worthington, three in Chesterfield, and one in Goshen. These wells are all proximate to MassDOT routes: MA 143 in Chesterfield, MA 9 and in Goshen, and MA 112 in Worthington. For more information, [see their reports, attached.](#)

**Communication Challenges:** Like many rural towns in the region, the hilltowns are beset by spotty cell service and limited internet access. Poor cell coverage is a real challenge for residents, businesses, and first responders. Participants are hopeful that internet service will be drastically improved within the coming years when new

broadband networks come online – all four towns are slated to be complete in 2020.

First responders report that there are many dead spots for emergency radio-to-radio connections as well, potentially delaying or limiting their capacity to respond quickly.

In addition to equipment and infrastructure challenges, workshop participants noted a need to increase education about and uptake of existing communication channels that could serve residents during an emergency and for day-to-day announcements. All four towns subscribe to some sort of emergency communications or reverse 911 system that can distribute information to any residents who sign up for alerts. Cummington uses Blackboard Connect, Chesterfield and Goshen use CodeRed, and Worthington uses CivicReady. While these systems are useful tools for emergency preparedness and response, they can only help those residents who know about the tools and elect to sign up to use them. Residents who haven't opted in, along with non-residents visiting or travelling through the town, would not be notified of a local emergency.

Workshop participants also expressed concern over the social isolation that ensues from residents aging in place without close neighbors, and needing to institutionalize a system of checking in on one another when preparing for a winter storm or during power outages. Informal lists of residents requiring extra support or services currently exist with the Councils on Aging in Chesterfield and Goshen and Fire Department in Cummington, but it is unclear how these lists are maintained and who can access them. The needs for improved community gathering spaces, such as

senior centers, and increased diversity of communication methods were highlighted.

Over the course of the two local workshops and the regional workshop, it also became clear that there was a lack of awareness about a number of resources that already exist. For example, many local participants highlighted a need for a regional pet shelter or a plan for sheltering pets in event of emergency. However, Chesterfield and Goshen's regional EMD noted at the regional meeting that this plan and system already exists. Therefore, increased communication around and dissemination of existing systems and resources became the ultimate strategy. In studying local emergency response plans and the needs of local residents, Smith College students developed a strategy for disseminating more of this information with a series of workshop topics.

The four communities also noted that as population in most of the towns has declined in past years, they have turned to regionalization of services (schools, emergency management, etc.). While regionalization is often an efficient and cost-effective way of continuing levels of service that might otherwise be impossible in these small towns, participants indicate it has contributed to a loss of community identity and shared culture. In particular, Cummington participants noted that with the closing of their local Berkshire Trail Elementary School in 2017 there have been ramifications for dissemination of communications throughout the town. The school had been a focal point for many in the community, and was therefore an easy way to send news to local households. As Cummington is sending students to the Central Berkshire Regional School District, there is no longer an easy way to get a

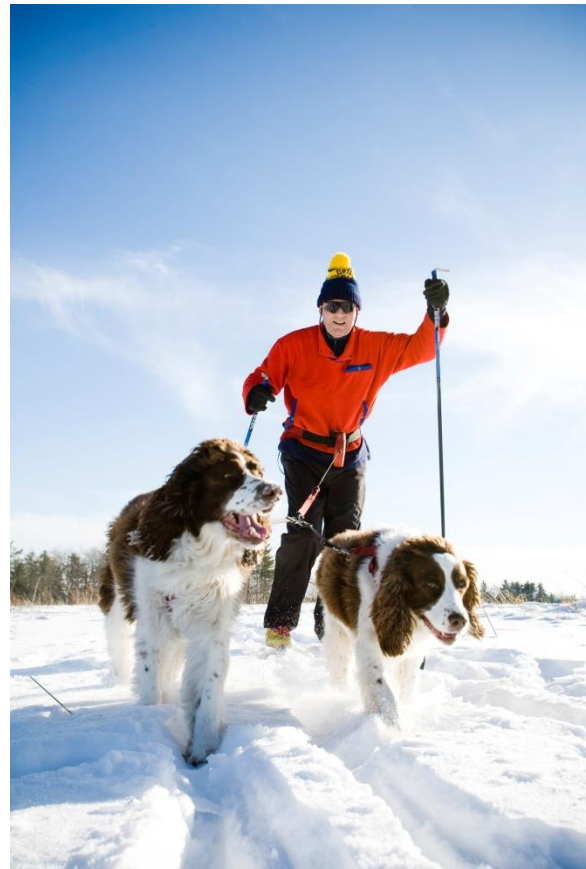


large population of the town together regularly.

**Municipal Capacity:** Many of the climate impacts the northern hilltowns are facing are universal across the Pioneer Valley. Though the details may be different town by town, nearly all MVP certified communities in western Massachusetts have identified more frequent power outages, an increasing and more frequent need for road maintenance and repair, and concern about drinking water quantity and quality as top concerns. One aspect unique to small, rural communities such as those in hilltowns, however, is the greatly limited capacity of local elected officials and local budgets. The four communities of the northern hilltowns run largely on volunteer labor, and key positions--ranging from Town Administrator to firefighter--are filled by local residents who often have fulltime jobs out of the region. While these volunteers are devoted to their communities and perform exemplary work, they may be unable to react as quickly to new state programming or grant opportunities as those communities that have professional staff.

The reliance on volunteerism also means that some positions may go unfilled for long periods of time if no one is able to step in. With many residents working full time, facing long commutes to work and sometimes additional drive time to drop off and pick up children from school in a different town, available time for high-impact volunteer work is extremely limited. Worthington noted that the town has had a dearth of volunteer firefighters, leaving the community vulnerable without full capacity response.

The aging and generally declining population of the four communities also



*Residents and visitors to the hilltowns alike enjoy the area for the variety of outdoor activities available, such as cross-country skiing, but which are under increasing threat from climate change. Source: Flickr user Massachusetts Office of Travel & Tourism.*

threatens a system of government reliant on volunteers. As the residential population either becomes too old or too few to meet the rigorous demands of running a municipality, these positions become less and less likely to be filled.

The municipal capacity of the four communities is also undercut by their small budgets. Small towns with between 400-600 households each, the tax base is limited in all four towns. A recent study in Chesterfield showed that over the past 30 years, the combination of a 10% reduction of the state share in the municipal budget and the removal of nearly 3,000 acres of land from

the tax rolls, due to permanent conservation, has contributed to the great challenge in meeting municipal costs. While the state does provide Payment in Lieu of Taxes for conserved lands that it owns, these payments are not in keeping with local needs. The Town of Chesterfield, in turn, has leaned heavily on increasing the local tax rate for remaining taxable properties to try to make up differences. They have also deferred maintenance on many infrastructure assets, including the fire station, which dates to the 1950s, and Town Offices, which dates to the 1940s.

The hilltown region also struggles to support many commercial operations or small businesses, limiting tax revenue from this sector, and those businesses, for which the area is known, rely on seasonal weather and temperature patterns that are already shifting with climate change. Historically, maple sugaring, gift shops and food operations catering to “leaf peepers,” and outdoor tourism has driven much of the local economy, suggesting a real prospect of declining local revenue in the future.

**Natural Resources:** Invasive species and habitat shifts were another topic of conversation, especially as they relate to tree mortality, riparian erosion, and vector-borne diseases. Participants noted that vegetative invasives were encroaching on conservation land and riparian areas, and that Japanese knotweed in particular was crowding out native habitat and destabilizing soils along stream and riverbeds. Also of concern were the north-shifting habitats of mosquitoes and ticks, and the introduction of new insects into the landscape.

Participants discussed the destruction or weakening of trees in the right-of-way, near homes and buildings, and on forested land by invasive insects such as the emerald ash borer and the hemlock woolly adelgid. Participants also noted the cultural effect that new or more prevalent occurrences of vector-borne diseases, such as eastern equine encephalitis (EEE) and Lyme disease, were having on their communities and recreational activities. Hilltown residents are considering hiking less and spending less time outdoors.

**Zoning & Future Development:** The majority of development within the northern hilltowns is large lot, single-family residential, and the need to reconsider existing zoning code in all four towns was highlighted in each workshop. As the population ages, seniors living in larger homes don’t have an easy way of downsizing to smaller, less expensive homes as zoning codes in each community promote low-density residential development and have stringent restrictions on two-family homes and apartment dwellings.

Interviews by Smith College students with elected officials revealed that the bylaws are no longer desirable for many residents, with one respondent dubbing them “snob zoning.” Currently, neither Worthington nor Goshen has a downtown zoning district that facilitates denser development than other “rural” residential zones, and Worthington does not allow for multi-family homes at all.



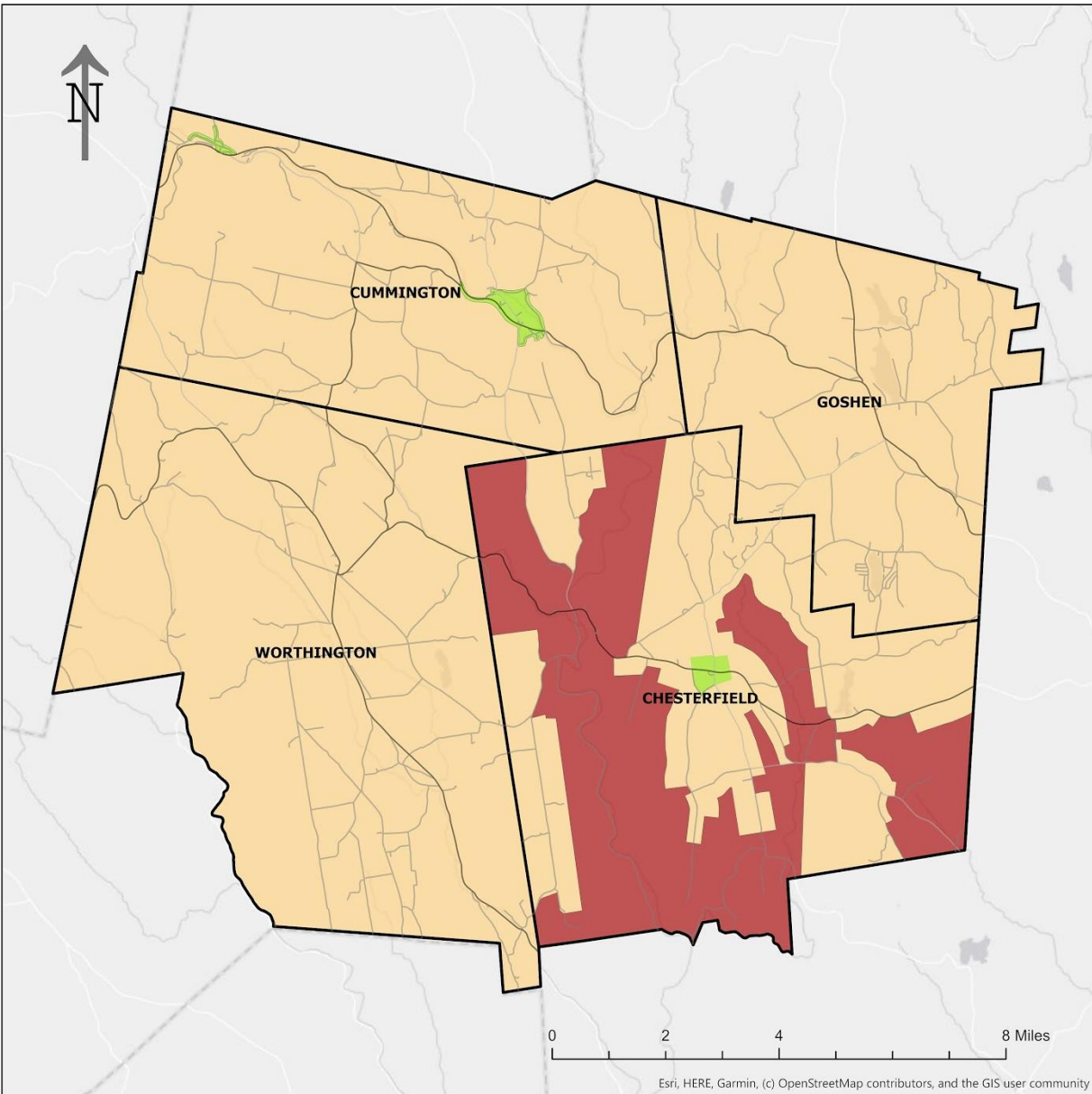


*Maple sugaring is a large component of the local hilltown economy. Top right: Windy Hill Farm in Worthington sells products on site; Bottom right: Justamere Tree Farm in Worthington is a staple at farmers markets in larger towns, such as this one in Northampton; and Left Bottom to Top: Red Bucket Sugar Shack in Worthington welcomes visitors to its restaurant during the late winter to watch sugaring in action, sample the syrup on homemade pancakes, and purchase products on-site. All images source: Flickr user Massachusetts Office of Travel & Tourism*

Goshen requires a special permit for building two-family dwellings—generally, the extra administrative onus of applying for a special permit and uncertainty of acquiring one is considered to be a deterrent for many developers. Large lot, single family homes may be unaffordable to young families or

undesirable for aging or small households, and restrictive zoning could contribute to the population decline of the area as young adults, new families, and aging or smaller households move elsewhere to find housing stock that suits their needs.





*Smith College students mapped the zoning code in each community by least restrictive (green) to most restrictive (red). Source: Smith College*

Participants also explored the possibility of future climate migration to their area. Already a popular destination for summertime vacationers and second homes, the northern hilltowns offer an abundance of water, relatively cool summer temperatures, and clean air. The prospect that these assets could attract new residents from the greater region, or eventually even from all over the east coast,

was not lost on workshop participants. While the populations may be currently declining, workshop attendees discussed possible scenarios about future build-outs of their communities, and population growth resulting from the rollout of broadband, and what strengths and vulnerabilities the arrival of new residents may bring. Specifically, existing roadway infrastructure and the local, small or regional school systems may

be burdened; however, new residents could fill empty volunteer positions in the towns and boost the tax base.

Either way, participants were generally in agreement that zoning overhauls are needed – both to meet the needs of existing residents and to preserve the small town

character of their communities while providing more housing options for the future. The new zoning code in each community should provide laxer restrictions on the type and size of housing built and encourage density in town centers, while also preserving natural resources and protecting the small town aesthetic.

## Current Strengths & Assets

As a result of the hilltown's broad experience with extreme weather, in addition to residents' pride of place, workshop participants were quick to point out their communities' strengths in responding to the challenges identified above, summarized here:

- Transportation Infrastructure
- Power Grid/Utility Infrastructure
- Vulnerable Populations
- Drinking and Wastewater Infrastructure
- Communication Challenges
- Municipal Capacity
- Natural Resources
- Zoning & Future Development

Reinforcing and expanding upon these strengths and community assets to increase resiliency against the impacts of climate change is a common theme to the proposed actions within this report.

Some of the key strengths discussed included:

### Chesterfield

- The regional shelter is located at New Hingham Elementary School in town
- The abundance of permanently protected lands, including agricultural land
- The extent of canopy cover
- The Chesterfield General Store

### Cummington

- Municipal, gravity-fed water in town center
- Quality of groundwater
- Rural character of the community, and the ability to choose to live on private roads with low traffic
- Historic housing stock
- Existing partnerships between neighboring communities to assist in times of need
- A self-sufficient community which is generally able to shelter-in-place
- Proximity to the Westfield River
- Extensive canopy cover
- Large lots and existing agriculture indicates ability to grow our own food
- The Cummington Creamery



*Cummington identified The Old Creamery, a local grocery cooperative (right), and historic buildings, such as the William Cullen Bryant House (left), as assets. Source: Flickr user Massachusetts Office of Travel & Tourism*

### Goshen

- MA Route 9 brings visitors through town and allows convenient access to the region
- Council on Aging and existing level of services for seniors
- The volunteers that run the town and its departments are highly committed
- Extensive tree canopy
- Quality of ground and surface water is generally very high
- Large amounts of conserved land

### Worthington

- The Community Health Center in town center
- Volunteerism exhibited by residents
- General preparedness amongst residents, including widespread ownership of personal generators
- Maples, the affordable housing development in the center of town
- The proactive trimming of limbs within the rights-of-way by Eversource
- Clean groundwater, and the general abundance of natural resources

such as tree canopy and surface water

### Regional

- Existing agreements of mutual aid and regional services
- Land-based occupations and eco-tourism provide for local economy
- The Westfield River, and other streams and surface waters are abundant
- Extensive tree canopy
- Extensive amount of conserved land
- Rural aesthetic
- Self-sufficient “Yankee” attitude of locals
- Attractiveness of area to potential climate migrants



# Top Recommendations to Improve Resilience

In each local workshop, small groups from each community identified strategies that the towns, in collaboration with neighboring municipalities, regional partners, and state agencies, should take to improve resilience to climate change impacts. Toward the end of the workshop, each of the small groups presented two or three local and one regional top priority actions to the large group, and these actions were assembled with any other like actions from the same community, resulting in the priority actions listed below. Participants from each community had the opportunity to vote on the most pressing strategies for their communities to undertake. Participants were only allowed to vote on their own community's strategies. The highest priority actions are shown in **green**.

The regional workshop followed the same format, with strategies developed for regional actors, and with all participants allowed to vote for any strategy.

## **Chesterfield**

Chesterfield was represented by one small group. Workshop participants identified three local and one regional priority actions listed below (in no specific order).

- Conduct an analysis and assessment of culverts and bridges and seek funding for improvements
- Research best practices on planting new tree species for climate resilience and implement (Regional)
- Update planning documents, particularly the Open Space and Recreation Plan

- Conduct a public education campaign on preparedness and improve general communications

Strategies from a separate recently completed study in Chesterfield speak to the importance of related economic elements that greatly contribute to the Town's overall resiliency. These include: improving state PILOT payments to ensure the Town can better provide needed services; working with land conservation organizations to integrate considerations of rural economy and affordable housing in acquisition activities; bolstering the recreational economy with solutions that are scaled to what the Town envisions; and coordinating with neighboring towns to hire a joint economic development director.

## **Cummington**

Cummington was represented by one small group. Workshop participants identified three local and one regional priority actions listed below (in no specific order).

- Continue efforts to evaluate, assess, and design new replacement culvert/bridge for Stage Road
- Improve community outreach and enhance communication to improve community cohesion and preparedness
- Conduct a study of nature-based solutions and invasive removal for floodplain control along the Westfield River corridor
- Conduct a regional road evaluation to plan for existing and future use. Current roads were designed and laid out in the early 1700s (Regional)

- Undertake a cultural and ecological revitalization program centered around Cummington's former Berkshire Trail Elementary school. The project would include restoration of the East Branch Westfield River floodplain at this location, and a building retrofit to serve as a tourist hostel and regional emergency operations center.

### Goshen

Goshen was represented by three small groups. Workshop participants identified 16 priority actions, which were assembled with like actions from the other small group, resulting in the nine local priority actions and three regional priority actions listed below (in no specific order).

- Improve watershed quality by collaborating with Westfield Wild and Scenic Committee and neighboring towns (Regional)
- Develop a Hilltown Regional Debris Management Plan and implement with MoUs to accept and process debris (Regional)
- Assess and enhance communication capabilities to and with residents to ensure all are resilient (Code Red, Town website, etc.)
- Conduct a town visioning process followed by regulatory changes as needed to ensure a climate resilient town—including formalizing General Bylaws
- Map municipal wells and investigate the quality and quantity of water supply therein
- Conduct a viability study and design for the new Highway Department facility

- Replace/re-size the top four problem culverts after conducting an inventory and assessment of all culverts and incorporating nature-based solutions as practicable
- Identify and remove hazard trees and investigate potential funding to do so
- Develop a road maintenance prioritization plan
- Ensure the regional shelter provides services for children, the elderly, and special needs residents (Regional)

### Worthington

Worthington was represented by two small groups. Workshop participants identified seven priority actions, which were assembled with like actions from the other small group, resulting in the five local priority actions and two regional priority action listed below (in no specific order).

- Research/address drinking water sources/supplies, including a hydrology study of aquifers, to ensure resilient water supply
- Conduct a study to determine strategies for improving drainage to prevent mud, wash out, and improve passability of dirt and gravel roads (Regional)
- Develop a way to use the reverse 911 system to reverse ping all cell phones in the region, not just residents, with emergency information, like Amber Alert (Regional)

- Conduct a feasibility study to develop a shared, paid staff position for fire and emergency services; develop a fire volunteer recruitment plan; and hold CPR and emergency response classes for schools, residents, and employers
- Care for economically, socially, and otherwise vulnerable residents by starting/reinvigorating the process to address affordable housing issues, including: reconsidering the CPA; revising local zoning to make more housing options available (such as accessory dwelling units and/or tiny homes); conducting an inventory of vulnerable residents and developing a check-on list during and after emergency events; and assisting residents in signing up for reverse 911 system
- Conduct a feasibility study to determine the ability to establish a Red Cross certified shelter in town, with a pet plan, and conduct outreach to residents to ensure they know about the sheltering services currently provided at the school and fire station

### **Regional**

Representatives from all four towns split into three small groups, along with participating stakeholders from Wild and Scenic Westfield River Committee, the Hilltown Community Health Center, Pioneer Valley Planning Commission, Hilltown Land Trust, Hilltown Community Development Corporation, Smith College, and Westfield River Watershed Association. Each of the three groups identified nine priority actions, which were assembled with like actions, resulting in the eight priority regional actions listed below (in no specific order).

- Conduct a wildfire area assessment and emergency plan.
- Conduct a regional culvert inventory, assessment, and management plan considering future needs based on climate change projections. Survey all culverts in the four towns and identify the most ecologically crossings; coordinate with highway departments to identify the culverts and bridges currently most vulnerable to changing conditions and at risk of failure; identify culverts that impact critical evacuation routes; and use all of the information to develop a regional culvert repair and replacement plan.
- Implement recommendations from the 2019 Rural Policy Plan for the Commonwealth of Massachusetts that call for creating micro-transit and other alternative transit options.
- Conduct a study of inter-municipal roadways, especially dirt and gravel roads, and develop a prioritization plan for improvement.
- Obtain state funding to subsidize water quality testing of private wells. Analyze collected data collected to identify trends in the watershed and determine best practices for groundwater protection.
- Protect groundwater quality by:
  1. Requiring local highway departments and MassDOT to employ alternative ice management strategies to reduce heavy salting
  2. Conduct a regional study of groundwater and aquifer recharge dynamics to identify vulnerabilities and best practices going forward



3. Secure support from MassDOT to remediate wells contaminated from historically heavy road salt applications
4. Install a municipal car wash to protect municipal vehicles from salt degradation, to prevent polluted car wash runoff to nearby streams, and to reduce the spread of invasive species.

All actions recommended during the CRB workshop were shared with the public at a Public Listening Session (PLS) on ...

A full list of the final recommendations from the CRB Workshops, organized by high, medium, and low priority, follows on the next few pages.

Please note that within each category, the actions are not listed in any specific order. All resiliency recommendations received outside of the CRB Workshop are assigned a priority level of “Not Specified.”

## Regional Actions

No.	Sector	Feature	Action	Prior ity
1	ENV	Westfield River; rivers & streams generally abundant	1. Implement recommendations from upcoming Westfield River Watershed Action Plan (WWAAP)	H
2	ENV		2. Make sure all towns are aware of their role and responsibilities in maintaining a healthy Westfield River.	H
3	ENV	Invasive Species (Vegetative)	1. Conduct a study to determine which species are posing the biggest threats throughout the region and what locations are most under threat, how best to address, what resources are available, and what are best practices for disposal 2. Implement recommendations from The Nature Conservancy and WWAAP on invasives management (using the Early Detection Rapid Response Map)	H
4	ENV	Tree Canopy	1. Review resources and adopt tree planting guidelines that address appropriately species to plant near ROWs and power lines (size, branching, root depth, etc.) and distribute to residents	H
5	ENV		2. Review resources and adopt regionally-relevant list of climate-resilient species which landowners can use to repopulate their forest stands and/or use in the landscape	H
6	ENV		3. Lobby state for more money to support forest maintenance best practices	H
7	ENV		4. Secure grant funding to conduct a regional urban heat island/hot spots analysis and plant trees accordingly	H
8	ENV	Drinking Water Wells / Groundwater quality & quantity	1. Develop a regulatory prohibition on water-mining in Town, and consider doing the same across the region in order to protect the health of our rivers and streams and provide long-term protection of drinking water resources	H
9	ENV		2. Develop alternatives to heavy salting on roadways for environmental protection and lobby for the same for MassDOT	H
10	ENV		3. Conduct an assessment of groundwater recharge in region & a hydrology study of aquifers to ensure protection	H
11	ENV		4. Get commitment from MassDOT to remediate wells with existing contamination linked to historical road salting practices	H
12	ENV		6. Obtain funding to subsidize testing of private wells, the results of which could help to understand water quality trends throughout the region	H
13	ENV		7. Develop hilltown-specific material for outreach to residents, businesses, etc. on best practices for groundwater supply protection, including education on maintaining septic systems	H
14	ENV	Invasive Species (Insect) - shifts in range	1. Share educational campaign for residents around firewood transportation between community boundaries to reduce spread of invasive species	H
15	ENV		2. Conduct public health outreach campaign around vector-borne diseases, including identification of symptoms, methods of prevention, and environmentally-friendly/drinking-water friendly ways of discouraging large populations of mosquitos/ticks, such as encouraging natural predation by native species (bats, dragonflies, possums, etc.)	H
16	ENV	Pollinator Decline	1. Disseminate information around causes of pollinator decline and address regionally (incl. installing bee friendly habitat, protecting native plant communities)	H
17	ENV		2. Get buy-in from neighboring towns to become a pollinator-friendly region, including adopting policies for organic property maintenance on municipal parcels and educating residents around same	H
18	ENV	Conserved Land / Low Tax Base	1. Lobby state for increased compensation/increased of Payment In Lieu of Taxes (PILOT) payments in order to promote land conservation in the context of a low tax base	H
19	ENV	Wildfire Risk	1. Conduct a wildfire risk assessment and create an emergency plan of action for wildfire	H
20	ENV		2. Promote long-term strategies to promote healthy and diverse forests to reduce wildfire risk	H

No.	Sector	Feature	Action	Priority
21	INF	Dirt / Gravel Roads; Road Passability Generally	1. Conduct study of existing conditions of inter-municipal roadways, esp. dirt and gravel roadways, & develop and implement a prioritization plan for maintenance/repair of critical/evacuation routes, including considering paving options	H
22	INF		2. Conduct a study to determine strategies for improving drainage on gravel and dirt roads to prevent mud ruts, washouts, and to improve passability while keeping dirt roads unpaved	H
23	INF		3. Conduct study to determine best strategies to avoid snow drifts onto roads (snow fences, hedgerows) and distribute regionally	H
24	INF		4. Evaluate regional road network to plan for existing and future use, as current roads were laid out and designed in early 1700s	H
25	INF		6. Collaborate across towns on roadside plantings with templates for planting designs and plants to use	H
26	INF	Post-disaster debris management (ad hoc)	1. Develop a Hilltown Regional Debris Management Plan and system for implementation with Memorandums of Understanding to accept and process debris	H
27	INF	Culverts, bridges (and drainage infrastructure)	1. At a regional scale, identify ecologically and infrastructurally significant culverts and priority roads, and overlay this data to develop a regional prioritization and implementation plan	H
28	INF		2. Conduct a regional culvert and drainage system inventory using modern technology to detect unknown infrastructure locations and conditions. Use previously conducted studies and inventories as a starting point. Implement a maintenance and management plan.	H
29	INF		3. Explore alternative design and construction methods for culverts and drainage infrastructure.	H
30	INF		4. All above to include bridges as well.	H
31	SOC	Towns run on volunteerism	1. Work with Western MA delegation to research, identify and implement innovative funding ideas, such as a state fund to reimburse municipal volunteers with tax breaks	H
32	SOC	Mutual Aid AND Regional Services	1. Work with Western MA delegation to see if it is possible to get the State to honor the original commitment to fund 100% of school transportation costs if the municipalities regionalized, and advocate for electric buses	H
33	SOC		2. Encourage at least 1 pre-winter regional coordination meeting of highway department staff from local communities to plan for road maintenance continuation across borders	H
34	SOC	Public Health / Communications	1. Develop a regional strategic plan to ensure health care services are available and can run uninterrupted despite severe climate and weather events	H
35	SOC		2. Develop a welcome packet for new residents including information about winter road maintenance, locations of comfort stations (heating shelters), regional shelters & services, Points of Distribution (POD), and emergency contacts	H
36	SOC		3. Educate residents on the services currently offered by the regional shelters and ensure the regional shelters provide for the needs of all residents (accessibility, children, seniors, special needs, etc.)	H
37	SOC		4. Educate residents about the existing sheltering plan for both domestic pets, farm animals, and livestock	H
38	SOC		5. Work with MEMA to set up a non-voluntary area-wide notification system to ping any cell phone in the area, not just individual Town residents' numbers or those that have signed up for reverse-911 systems, during an emergency (like an Amber Alert)	H
39	SOC		6. Conduct outreach and training to potential volunteers for emergency shelter teams	H
40	SOC	Lack of public transportation	1. Implement Rural Policy Plan recommendations for micro-transit and other alternative public transit ideas in rural towns	H
41	SOC		2. Advocate to Capitol Hill for increased funding to regional transit authorities	H
42	SOC		3. Seek opportunities for dedicated multi-modal routes throughout the hilltown region	H
43	SOC	Aging Population	1. Support COAs and Hilltown CDC in services to seniors.	H



No.	Sector	Feature	Action	Priority
44	SOC		2. Create new or expand upon existing voluntary inventory of vulnerable populations, using a localized, neighbor to neighbor approach (formalize informal support services that currently exist with the Councils on Aging or Fire Department)	H
45	SOC	Lack of economic base	4. Advocate for funding from state to establish a shared economic development director for the hilltowns	H
46	SOC	Regional School	2. In Cummington: Retrofit local school building as emergency shelter and office space, allowing Community House to return to community and socially oriented programming. Incorporate nature based flood protection and stormwater management at neighboring town park. <sup>1</sup>	H
47	SOC	Community Identity	1. Provide better outreach and visual materials to residents on town services and successes.	H
48	ENV	Invasive Species (Vegetative)	2. Focus on working along waterways to eradicate invasive species, moving from upstream to downstream.	M
49	ENV	Drinking Water Wells / Groundwater quality & quantity	5. Install a regional carwash to wash salt from municipal vehicles and stop spread of invasive vegetation	M
50	ENV	Solar/Wind/Land Use	1. Form regional working group for wind energy (like existing group for solar)	M
51	ENV		2. Conduct a regional feasibility study and implementation plan for renewable energy in the region.	M
52	INF	Dirt / Gravel Roads; Road Passability Generally	5. Explore options for pervious road surfaces and alternative road construction methods (for example using a Scandinavian model and BMPs).	M
53	INF	Lack of cell service / radio dead spots	1. Secure grants to build towers and install repeaters as needed to improve radio communications	M
54	INF		2. Work with radio stations to ensure radio DJs distribute appropriate information regarding emergency news & resources for those without power who are tuned in to a battery-powered radio (as opposed to directing them to online resources, etc.). Also consider designating a single Public Information Officer or emergency point of contact for each town, who may come together during a regional emergency to form a Joint Information Center.	M
55	INF		3. Develop a regional station to distribute locally relevant information, both during times of emergency and potentially during business-as-usual	M
56	INF	Funding Uncertainty/Lack of Capacity to Chase & Secure Grants	1. Develop a regional position for grant making, grant writing, and project management for resilience and nature-based projects	M
57	INF	Power Grid	2. Explore options for microgrid development to build a more climate-resilient power grid	M
58	INF		3. Redesign existing power grid to be a smart grid - build in redundancy	M
59	SOC	Towns run on volunteerism	2. Develop and implement student volunteer civics program with schools	M
60	SOC	Limited Access to Food Retail	1. Develop a regional strategic plan to ensure food supplies are available locally and can be accessed uninterrupted in event of limited transportation mobility or other emergency event	M

<sup>1</sup> Note: upon review of the workshop findings, this action was deemed to be a municipally-specific action for Cummington, rather than a regional action.

No.	Sector	Feature	Action	Priority
61	SOC		2. Ensure residents know about emergency Point of Distribution (P.O.D.)	M
62	SOC	Regional Communication	1. Increase person to person conversations between town officials of municipalities within the region.	M
63	SOC	Regional School	1. Protect local schools in the region as community sites.	M
64	ENV	Westfield River; rivers & streams generally abundant	1. Improve watershed quality: collaborate with neighboring towns to study water quality and develop a plan for the river	L
65	ENV	Wastewater-Septic	1. Work for state-level policy to allow for composting toilets, reducing the risk of septic systems contaminating groundwater	L
66	INF	Power Grid	1. Conduct a feasibility study to determine the cost and barriers of burying powerlines most at risk by tree limbs, ice, etc.	L
67	INF	Paved Roads	1. Improve communication with state on road salt usage in the region	L
68	INF		2. Track road salt usage at the regional level	L
69	INF		3. Explore alternative road de-icing treatments to move away from road salt	L
70	SOC	Land-based occupations (agriculture, forestry, tourism, etc.)	1. Conduct outreach to those in land-based occupations (agriculture, forestry, tourism, etc.) to connect them with best practices for climate adaptation and research coming from institutes like UMass.	L
71	SOC	Lack of economic base	1. Create new Regional Community/Economic Development Plan to help develop and increase the tax base in the hilltowns. This plan should identify groups, individuals, and funding to implement identified actions and should begin with a conversation about regional identity.	L
72	SOC		2. Create a regional hostel at the former elementary school in Cummington to attract visitors.	L
73	SOC		3. Create a grant program to support awareness of local arts scene (such as paying for one free art class with a local artist)	L
74	SOC	Towns run on volunteerism	3. Tie into succession planning for Town boards to help ensure sufficient knowledge transfer and provision of services despite the towns' reliance on volunteerism	NS
75	SOC	Vulnerable deaf, blind, physically challenged populations	1. Identify specific needs of vulnerable deaf, blind, physically challenged populations and work with Stavros or other such agency to understand available services	NS

Acronyms and Abbreviations:

ENV Environmental

INF Infrastructure

SOC Societal

NS Not specified (regarding prioritization)

Note: In most cases, actions are presented in the table above as written by CRB Workshop participants. Where proposed actions in their original form lacked clarity or detail, the project team expanded upon the action in order to promote project-readiness.

## Chesterfield Actions

No.	Sector	Feature	Action	Priority
1	SOC	Access to fuel, both gas and propane	Develop regional strategic plan to address issues including access to fuel, food, and health care	H
2	SOC	Water supply, and specifically need for electricity to power pumps	Conduct outreach and education to generate more awareness so people not caught off guard when they lose access to drinking water in the event of a power outage; also share information on how to prepare for such an event, and where other sources of drinking water are available	H
3	SOC	Access to food	Develop regional strategic plan to address issues including access to fuel, food, and health care	H
4	SOC	Access to health care	Develop regional strategic plan to address issues including access to fuel, food, and health care	H
5	SOC	Communications network / "Reverse 911"	Expand and increase education and outreach on emergency communications tools and resources, preparedness, and who to contact; distribute "Go Kits" to all residents. Target outreach to aging population, among others.	H
6	INF	Power grid (Eversource)	Continue to work on clearing hazard trees that not in Eversource's domain (other side of street from power lines) to reduce debris blocking roadways and/or impacting power infrastructure	H
7	INF	Road surfaces	Analyze and prioritize dirt roads for paving	H
8	INF	Bridges and culverts	Analyze bridges and culverts and prioritize for fixes	H
9	ENV	Lack of plan that identifies priority areas for protection / priority areas for development	Establish open space and recreation committee to develop or update a plan that identifies priority areas for protection / priority areas for development	H
10	ENV	Lack of plan that identifies priority areas for protection / priority areas for development	Update open space and recreation plan	H
11	ENV	Lack of plan that identifies priority areas for protection / priority areas for development	Update Community Development Plan/Master Plan	H
12	ENV	Trees and forest health	Assess condition of trees, develop a management plan for climate resilience with special attention to vulnerable vs. resilient species and existing problems, and implement plan	H
13	ENV	Existing protected lands, including agricultural land	Support land conservation	H
14	ENV	Existing protected lands, including agricultural land	Conduct additional public education about incentives for protecting lands, including agricultural land	H
15	ENV	Invasive species	Determine how best to address invasive species, what resources are available, and what are the best practices for disposal	M



No.	Sector	Feature	Action	Priority
16	ENV	Existing protected lands, including agricultural land	Examine what resources available to demonstrate values of ecosystem services	M
17	ENV	Debris	Identify local woody debris disposal location	M

Acronyms and Abbreviations:

ENV Environmental

INF Infrastructure

SOC Societal

NS Not specified (regarding prioritization)

Note: In most cases, actions are presented in the table above as written by CRB Workshop participants. Where proposed actions in their original form lacked clarity or detail, the project team expanded upon the action in order to promote project-readiness.

## Cummington Actions

No.	Sector	Feature	Action	Priority
1	INF	Dirt Roads	1. Continue ongoing maintenance and independent existing road improvement plans for dirt roads	H
2	SOC	Regional Network/Resources	3. Maintain / increase community cohesion despite regionalization of services, such as the school	H
3	SOC	Reverse 911 / Emergency Communication	1. Continue to improve town emergency communications, including utilizing reverse 911 system as a resource	H
4	ENV	Ability to grow food	1. More education on alternative approaches to growing local food (science-based, more hands-on growing, more people)	NS
5	ENV	Ability to grow food	2. Rethink what we foods are growing and eating	NS
6	ENV	Forest cover	1. Implement forest management plans to ensure forest cover adapts to climate change	NS
7	ENV	Forest cover	2. Conduct studies to develop forest and tree planting recommendations for climate resilience	NS
8	ENV	Forest cover	3. Lobby state for more money to support forest maintenance best practices	NS
9	ENV	Forest cover	4. Support forestry plans for small properties that are currently not eligible for state support	NS
10	ENV	Forest cover	5. Establish programs for bulk purchasing of trees to ensure resilient forest cover	NS
11	ENV	Westfield River and invasive vegetation	1. Create a riverwalk along the Westfield River to improve access/education/and public health	NS
12	ENV	Westfield River and invasive vegetation	2. Foster a stronger relationship with Westfield Wild & Scenic to develop better stewardship opportunities (water temp, invasive species removal, etc.)	NS
13	ENV	Westfield River and invasive vegetation	3. Support efforts to safely control invasive vegetation along the Westfield River, including non-chemical/toxic options	NS
14	ENV	Westfield River and invasive vegetation	4. Explore funding sources for studies to understand increased potential for flooding along the Westfield River due to climate change	NS
15	INF	Culverts (Stage Rd)	1. Continue to utilize grant funding to improve culverts to accommodate for increased precipitation	NS
16	INF	Culverts (Stage Rd)	2. Implement new culvert designs to accommodate for increased precipitation and habitat connectivity	NS
17	INF	Culverts (Stage Rd)	3. Explore need for a bridge at Stage Rd culvert	NS
18	INF	Electric Grid	1. Establish hardwired back-up power to critical facilities	NS
19	INF	Electric Grid	2. Establish a micro-grid that can be islanded	NS
20	INF	Internet/Cell Service	1. Continue to implement improvements to local internet and cell service	NS
21	INF	Municipal Water	1. Provide permanent back-up power for municipal water pumping stations	NS
22	INF	Municipal Water	2. Increase existing fuel supply and storage capacity at municipal water facilities to ensure adequate power to keep system running	NS
23	INF	Older building stock	1. Provide back-up power for the Community House (shelter) in the village center	NS
24	INF	Older building stock	2. Explore potential for solar and battery storage or other non-fossil fuel storage and back-up for municipal	NS

No.	Sector	Feature	Action	Priority
			buildings in the village center	
25	INF	Older building stock	3. Continue to explore options for reuse of school building	NS
26	INF	Older building stock	4. Implement energy retrofits for municipal buildings via Green Community funding	NS
27	INF	Private and Public Roads	1. Study current road designs and specifications to ensure designs are resilient to changing climactic conditions	NS
28	INF	Resource delivery disruption	1. Encourage appropriate stockpiling of resources via a public outreach campaign to reduce future instances of resource delivery disruption	NS
29	INF	Resource delivery disruption	2. Study municipal stockpiling needs and work with Community Emergency Response Team (CERT) team to implement to reduce future instances of resource delivery disruption	NS
30	INF	Resource delivery disruption	3. Study/Map community resources in case of emergency	NS
31	INF	Wells and Septic Systems	1. Increase public awareness of resources available for residents on private wells and septic systems	NS
32	INF	Wells and Septic Systems	2. Promote and purchase hand-pumps for drinking water resilience on properties reliant on private wells	NS
33	SOC	Climate Refugees	1. Implement zoning changes to plan for/accommodate future climate migrants and refugees while protecting natural resources	NS
34	SOC	Existing Hazard Mitigation Plan & others	1. Actively implement existing plans, including the Hazard Mitigation Plan and others	NS
35	SOC	Regional Network/Resources	1. Continue to support regional programs, such as the Disaster Assistance Response Team (DART), Highland Ambulance, Mobile Market	NS
36	SOC	Regional Network/Resources	2. Explore opportunities for public transit that connects to a regional network	NS
37	SOC	Self-sufficient community	1. Create an opt-in email list to ensure greater outreach and communication	NS
38	SOC	Vulnerable population	1. Implement improvements in municipal buildings to better serve vulnerable populations	NS
39	SOC	Vulnerable population	2. Continue to encourage tracking/voluntary list of vulnerable populations for wellness check & emergency planning	NS

Acronyms and Abbreviations:

ENV Environmental

INF Infrastructure

SOC Societal

NS Not specified (regarding prioritization)

Note: In most cases, actions are presented in the table above as written by CRB Workshop participants. Where proposed actions in their original form lacked clarity or detail, the project team expanded upon the action in order to promote project-readiness.



## Goshen Actions

No.	Sector	Feature	Action	Priority
1	ENV	Open space vulnerable to development	When updating Open Space and Recreation Plan (OSRP), identify priority parcels for protection using climate resilient tools in order to reduce vulnerability of open space to development	H
2	INF	Aging built infrastructure	Implement Rural Policy Plan (RPP) recommendations related to aging built infrastructure including septic tanks and leach fields. Recommendations include developing a rural fund for septic.	H
3	INF	Culverts (East St especially)	1. Lobby MassDOT on culvert / road improvements	H
4	INF		2. Secure funding to fix the already identified top 4 problem culverts including Fuller RD, Sears Rd, and East St., and consider nature based solutions as part of the solution to assure maximum climate resilience	H
5	INF		3. Complete and maintain a culvert conditions assessment and prioritization plan to use to secure funding for culvert redesign and replacement	H
6	INF	Dirt Roads	1. Explore options for dirt road maintenance (paving? Alternative solutions)	H
7	INF		2. Study of existing conditions on all dirt roads, and prioritization of critical roads (evacuation routes, etc.) for improvement	H
8	INF	Flooding of roadways/snow piling	1. Route 9 improvement to reduce flooding and snow piling. Include roadway widening, sidewalks, bike lanes, and green stormwater management	H
9	INF	Police station, critical facilities	1. Conduct a feasibility study for where and how to build a new public safety complex to co-locate fire, police, and highway garage.	H
10	INF	Utility lines	1. Seek additional funds and equipment for ongoing tree maintenance for municipal trees to reduce power line vulnerability	H
11	INF		2. Continue working with National Grid on preemptive tree maintenance to reduce power line vulnerability	H
12	INF	Vulnerable electric utilities and limited broadband and cell	Complete broadband process and implement RPP recommendations related to broadband, cell access etc., in order to reduce vulnerability of electric utilities and communications	H
13	INF	Wells and small public water supply	Secure state or other research and funding assistance to understand how to de-contaminate public drinking water supplies, including the well at Town Hall and others contaminated by road salt	H
14	SOC	CoA/Senior Services	1. Harness relationships within the Council on Aging (COA), Elder Services, and others to work to assure all seniors sign up for code red emergency alert systems	H
15	SOC	Interdepartmental coordination for emergency services	1. Improve TV/Antenna service for improved communication (need a free way to communicate with all residents) and better interdepartmental coordination for emergency services	H
16	ENV	Declining bee populations	1. Understand causes of declining bee population and address (incl. installing bee friendly habitat)	M
17	ENV	Flood plains	1. Integrate a floodplain district into zoning as called for in Hazard Mitigation plan	M
18	ENV	Lack of forest management and debris in woods	Create a regional debris management plan (for roadway debris and debris in the woods) with MOUs for implementation & enforcement	M
19	ENV	Land Conservation/Low Tax Base	1. Lobby state for increased compensation for land conservation	M
20	ENV	Ticks and invasive insects	1. Explore options for population control of ticks and invasive insects	M
21	ENV	Trees!	1. Prioritize roadside trees for maintenance	M

No.	Sector	Feature	Action	Priority
22	ENV		2. Encourage robust, environmentally friendly forest management amongst stand owners	M
23	ENV	Water Quality	1. Secure funding possibly from state to conduct a representative sampling of ~500? wells to assess possible contamination and water quality	M
24	ENV		2. Continue to advocate for reduced road salt use by MassDOT to safeguard drinking water quality and protect aquatic ecosystems	M
25	INF	Dams	1. Continue monitoring and maintenance of dams	M
26	INF		2. Seek funding for needed dam repairs	M
27	INF	Inaccessibility to Boston	Implement the proposed East-West rail to improve accessibility to Boston and other population centers	M
28	INF	Lack of public transportation	Implement RPP recommendations for micro-transit and other alternative public transit ideas in rural towns to address the lack of public transportation	M
29	INF	Police station, critical facilities	2. Explore options/conduct studies on water quality at police station and other public facilities	M
30	INF	Route 9	Work with state to assure rural character can be integrated into Rt. 9 road design, maintenance and safety	M
31	SOC	Business community	1. Encourage more business development in Goshen, starting with seasonal options	M
32	SOC		2. Implement Conway School's 2019 Town Center Plan with pop-up, small-scale businesses and improvement of pedestrian connections	M
33	SOC	Mutual Aid/Regional Services	1. Explore options for improved regional shelters (better communication on services available; make shelters more comfortable/accessible/offer more services) via mutual aid or regional services agreements	M
34	SOC	Population growth/decline	1. Update zoning to plan for future populations/development and natural resource protection	M
35	SOC	Restriction on dev in local zoning	1. Conduct a Town visioning process with related General Bylaw and Land Use Regulatory Bylaw changes to assure climate resilience	M
36	SOC		2. Modify local zoning for conversion of seasonal to year-round with climate resilience in mind	M
37	SOC	Tax Base: lack of bus +limited State res = Muni Fin trouble	Work with Western MA delegation to see if it is possible to get the State to honor the original commitment to fund 100% of school transportation costs if the municipalities regionalized	M
38	SOC	Council on Aging/ Senior Services	2. Explore permanent location for senior center in Goshen	L/M
39	SOC	Volunteers including Firefighters and Town government	Work with Western MA delegation to research, identify and implement innovative funding ideas, such as a state fund to reimburse municipal volunteers with tax breaks	L/M

Acronyms and Abbreviations:

ENV Environmental

INF Infrastructure

SOC Societal

NS Not specified (regarding prioritization)

Note: In most cases, actions are presented in the table above as written by CRB Workshop participants. Where proposed actions in their original form lacked clarity or detail, the project team expanded upon the action in order to promote project-readiness.

## Worthington Actions

No.	Sector	Feature	Action	Priority
1	SOC	Community Health Center	1. Establish an agreement to have the Community Health Center (CHC) in Worthington serve as a secondary Emergency Operations Center for the town.	NS
2	SOC	Maturing Populations	1. Encourage use of existing services for maturing populations and conduct outreach to de-stigmatize participation in and with these services	NS
3	SOC		2. Follow through with Senior Center design and construction in Worthington	NS
4	SOC		3. Develop an opt-in list for seniors and disabled populations for emergency response staff to check-up on during and after an emergency	NS
5	SOC	Volunteerism	1. Conduct a feasibility study to hire paid staff for fire services and emergency response to take place of or supplement current reliance on volunteers, possibly as a shared position between multiple towns	NS
6	SOC		2. Hold CPR and emergency response classes for schoolchildren, residents, and Town employees	NS
7	SOC		3. Develop a fire station volunteer recruitment plan to address and reverse declining rates of new volunteers	NS
8	SOC	Radio dead spots & lack of high-speed internet	1. Secure grants to build towers and install repeaters as need to improve radio communications and reduce radio dead spots	NS
9	SOC		2. Secure grants to acquire higher frequency radios to reduce the incidence of radio dead spots	NS
10	SOC		3. Complete broadband buildout to ensure all hilltown residents and businesses have access to reliable high speed internet	NS
11	SOC	Limited access roads (winter maintenance, etc.)	1. Develop a welcome packet for new residents including info about winter road maintenance (especially on limited access roads), locations of heating shelters, and emergency contacts	NS
12	SOC	Warming/Cooling Shelters	1. Conduct outreach to ensure residents know the Worthington Fire House offers heating shelter services	NS
13	SOC		2. Conduct a study to determine the feasibility of the Worthington Fire House and (Conwell Elementary??) school becoming Red Cross certified emergency shelters	NS
14	SOC		3. Develop a plan for how to house animals if owners are sheltering (or see existing plan??)	NS
15	SOC	Mobility Concerns	1. Work with MassDOT to ensure multi-modal design is considered in the upcoming Rt. 143 roundabout project	NS
16	SOC	Town voted down Community Preservation Act (CPA)	Re-consider adopting the Community Preservation Act (CPA) to fund a Housing Production Plan (HPP), accessory dwelling unit (ADU) work, etc.	NS
17	SOC	Very limited housing options	Re-consider CPA as a way to fund housing planning for the Town, including creating a fund to off-set the cost of creating ADUs for home-owners.	NS
18	INF	Worthington Fire District Town Water Supply	1. Conduct a conditions assessment on the Worthington Fire District Town Water Supply to determine any vulnerabilities in the face of climate change	NS
19	INF	Coordination between towns re: emergency and muni. Services	1. Continue and upkeep existing emergency response mutual aid agreements between neighboring towns	NS
20	INF		2. Encourage at least 1 pre-winter regional coordination meeting of highway department staff from local communities to plan for road maintenance continuation across borders	NS
21	INF	River Road Bridge	1. Apply for MassDOT Small Bridge grant for a total rebuild of the River Road Bridge.	NS



No.	Sector	Feature	Action	Priority
22	INF	Culverts	1. Ensure all culvert upgrades are designed to consider NAACC standards.	NS
23	INF	Dirt & Gravel Roads	1. Conduct a study to determine strategies for improving drainage on gravel and dirt roads to prevent mud ruts, washouts, and to improve passability	NS
24	INF		2. Research and learn from other countries/localities that have climate resilient pavement and secure funding to test it out as an alternative to dirt and gravel roads	NS
25	INF	Back-up generators in public and private buildings	1. Secure funding to acquire a back-up generator for Town Hall	NS
26	INF		2. Conduct feasibility study to determine if solar-to-battery generator would work for Town Hall, as opposed to gas-powered	NS
27	INF		3. Research viability of micro-grid for Town center as a means to increase resilience to power outages	NS
28	INF	Communications & Reverse 911	1. Customize Reverse 911 settings so that residents can opt-in to receive the types of notifications they find relevant and train departmental/emergency response staff on how to send notifications	NS
29	INF		2. Set up a communications system (Reverse 911 or other) to ping any cell phone in the area, not just residents' numbers, during an emergency	NS
30	INF	"Too strong" land use regulations limit development	Integrate flexible climate resilient land use regulations into the Town's bylaws to encourage appropriate development	NS
31	INF	No reliable comprehensive list of vulnerable populations	Research best practices for developing and maintaining reliable lists of vulnerable populations, especially examples from similar rural MVP towns in MA who have increased enrollment in reverse 911 and created an ongoing outreach/engagement plan for improved relationships with vulnerable populations	NS
32	INF	Affordable Housing	Expand housing options (beyond the 22 HUD-funded affordable housing units currently available for elderly and disabled residents, but open to all eligible in USA & 2-3 year wait list) by integrating an accessory dwelling unit (ADU) bylaw and possibly developing a Housing Production Plan or other community process to identify the kinds of housing people want and develop a plan to build it	NS
33	INF	No public transportation	Implement the mobility and alternative transit recommendations included in the Rural Policy Plan (RPP)	NS
34	INF	Reliance on Electric Grid	Research viability of a solar powered micro-grid with battery storage for the Maples residential facility and Community Health Center to reduce reliance on the existing electric grid, and reduce the town's vulnerability to outages that results from its location at the "end of the line" for service and repairs	NS
35	ENV	Tree maintenance and debris removal	1. Develop tree planting guidelines that address appropriate species to plant near rights of way and power lines (size, branching, etc.) and distribute to residents. This would reduce maintenance needs and decrease weather-generated debris.	NS
36	ENV		2. Educate residents on how to navigate around downed wires and hazard trees	NS
37	ENV		3. Participate in a regional Tree Management plan and inventory with guidance for replacing dead or currently hazardous trees with newer, climate resilient species	NS
38	ENV		4. Conduct a study to determine best strategies to avoid snow drifts onto roads (snow fences, hedgerows) and distribute to residents and town officials	NS
39	ENV	Rivers & Streams	1. Develop a regulatory prohibition on water-mining in Town, and consider doing the same across the region in order to protect the health of our rivers and streams and provide long-term protection of drinking water resources	NS
40	ENV		2. Develop alternatives to heavy salting on roadways for environmental protection and lobby for the same for MassDOT	NS

No.	Sector	Feature	Action	Priority
41	ENV	Invasive insects	1. Educate residents around firewood transportation between community boundaries to avoid the spread of invasive species	NS
42	ENV		2. Conduct public health outreach campaign around vector-borne diseases	NS
43	ENV	Clean Aquifer / Ground water	Conduct a drinking water resource needs assessment and hydrology study of local aquifers to plan for future drinking water quality and supply	NS

Acronyms and Abbreviations:

ENV Environmental

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SOC Societal

NS Not specified (regarding prioritization)

Note: In most cases, actions are presented in the table above as written by CRB Workshop participants. Where proposed actions in their original form lacked clarity or detail, the project team expanded upon the action in order to promote project-readiness.

# Public Engagement

In addition to the actions identified at the CRB Workshop, the MVP team solicited input from interactive posters placed in public places across each community. The posters prompted residents of the four towns to vote on the single action, among five top priorities, that the region should take *first* to address climate resilience. An example of the poster is shown below.

Unfortunately, the posters were rolled out at the same time as new COVID-19 social distancing recommendations were released around the country and in Massachusetts. This public health crisis not only resulted in the closing of many public facilities where the posters would have otherwise been located, but also reduced the number of people who would see the posters and be willing to partake in the voting exercise.

Northern Hilltown MVP partners made a second attempt to reach residents with a notification on each town's website, informing residents of the new draft Summary of Findings Report, and asking them to take an online survey to

vote on the top regional priority for climate resilience.

Comments on the draft Summary of Findings Report and on the posters and online survey are....

Goshen Wants Your Vote

## WHAT SHOULD OUR REGION DO FIRST

TO ADDRESS

## CLIMATE RESILIENCE?

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PLACE YOUR VOTE (ONE STICKY DOT OF ANY COLOR) IN ONE OF THE SPACES BELOW.

 <p><b>WILDFIRE RESILIENCE PLAN</b></p> <p>Study how climate change affects wildfire risk in the Hilltowns</p> <p>Study existing forest health and projected climate-related threats including prolonged dry periods, higher-intensity storms, and increases in tree-damaging insects. Create a regional forest adaptation plan outlining management practices for municipalities and private landowners to reduce wildfire risk and increase resilience.</p>	<p>↓ VOTE HERE! ↓</p>
 <p><b>REGIONAL CULVERT INVENTORY</b></p> <p>Prepare our infrastructure for increased stormflow, and improve habitat connectivity</p> <p>Conduct a regional culvert inventory, assessment, and management plan based on climate change projections. The project will rank culverts on their ecological significance, vulnerability to failure, and importance to critical evacuation routes, and develop a regional repair and replacement plan.</p>	<p>↓ VOTE HERE! ↓</p>
 <p><b>MASSACHUSETTS RURAL POLICY PLAN IMPLEMENTATION</b></p> <p>Prioritize and implement recommendations from the state's 2019 Rural Policy Plan that relate to climate resiliency</p> <p>Recommendations developed by stakeholders from the Hilltowns and elsewhere include investing in microtransit and infrastructure to support new technologies such as electric vehicles.</p>	<p>↓ VOTE HERE! ↓</p>
 <p><b>ROADWAY IMPROVEMENT PLAN</b></p> <p>Adapt our roadway network to changing weather and use patterns</p> <p>Create a regional plan that considers more frequent storms, extreme precipitation events, and frequent freezing and thawing brought by climate change. Study all roads—dirt and gravel, local and inter-municipal—for their vulnerability to failure and costs of repair. Develop a climate-adaptive prioritization and improvement plan to improve current and future mobility.</p>	<p>↓ VOTE HERE! ↓</p>
 <p><b>WATER QUALITY PROTECTION</b></p> <p>Assess the impact of climate change on groundwater quality in the Hilltowns</p> <p>Study will measure road salt impacts on drinking water quality by conducting tests at private wells and identifying trends. Findings would outline best practices for remediation and future protection, and propose requirements for alternative ice management strategies.</p>	<p>↓ VOTE HERE! ↓</p>

The Towns of Chesterfield, Cummington, Goshen, and Worthington are collaborating with the Pioneer Valley Planning Commission (PVPC), residents, and stakeholders on strategies to reduce vulnerability and adapt to our changing climate through the State's Municipal Vulnerability Preparedness (MVP) program. The core objective of the MVP program is to engage community stakeholders to facilitate the education, planning, and ultimate implementation of priority climate change adaptation actions. Completion of the MVP planning process will enable the Towns to receive preference for future state grants.

In February 2020, the Towns and PVPC held a series of Community Resilience Building workshops where key stakeholders from the four towns and broader region discussed climate vulnerabilities and identified approximately 75 actions that the towns, in collaboration with neighboring municipalities, local and regional partners and state agencies, should take to improve resilience to climate change impacts. At the end of the workshops, participants selected their highest priority regional actions from the suite of actions developed during the workshop. These regional actions are presented here in no specific order.



## Workshop Participants

Approximately 14 participants from Worthington and 7 from Cummington participated in the February 1 workshop; 21 from Goshen and 9 from Chesterfield participated in the February 5 workshop; and 15 participants representing the four communities and other regional stakeholders participated in the workshop on February 13. The participant check-in list is provided in [Appendix C](#).

## Citation

Northern Hilltowns (Chesterfield, Cummington, Goshen, and Worthington) Community Resilience Building Workshop Summary of Findings (2020). Pioneer Valley Planning Commission. Massachusetts.

## MVP Core Team/ Working Group

**Bill Adams**, Cummington Select Board  
Chair

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**Susan Labrie**, Chesterfield Town  
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Executive Assistant

**Angela Otis**, Goshen Select Board Chair

**Charley Rose**, Worthington Select Board  
Chair

**James Wettereau**, Cummington Board of  
Health

## Workshop Facilitators

(All of the Pioneer Valley Planning  
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## Acknowledgements

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